National Institute of Environmental Health Sciences

Geospatial tools for the identification of a malaria corridor in Estado Sucre, a Venezuelan north-eastern state

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Abstract:

Landscape ecology research relies on frameworks based on geographical information systems (GIS), geostatistics and spatial-feature relationships. With regard to health, the approach consists of systems analysis using a set of powerful tools aimed at the reduction of community vulnerability through improved public policies. The north-oriental malaria focus, one of five such foci in Venezuela, situated in the north-eastern part of the Estado Sucre state, unites several social and environmental features and functions as an epidemiological corridor, i.e. an endemic zone characterised by permanent interaction between the mosquito vector and the human host allowing a continuous persistence of the malaria lifecycle. A GIS was developed based on official cartography with thematic overlays depicting malaria distribution, socio-economic conditions, basic environmental information and specific features associated with the natural wetlands present in the area. Generally, malaria foci are continuously active but when the malaria situation was modelled in the north-oriental focus, a differential, spatio-temporal distribution pattern situation was found, i.e. a situation oscillating between very active and dormant transmission. This pattern was displayed by spatial and statistical analysis based on the model generated in this study and the results were confirmed by municipal and county malaria records. Control of malaria, keeping the incidence at a permanently low level within the regional population, should be possible if these results are taken into account when designing and implementing epidemiological surveillance policies.

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Resource Description

Climate Scenario :

specification of climate scenario (set of assumptions about future states related to climate)

Other Climate Scenario

Other Climate Scenario: El Nino Southern Oscillation

Exposure :

weather or climate related pathway by which climate change affects health

Ecosystem Changes, El Nino Southern Oscillation, Meteorological Factors, Precipitation, Temperature

Temperature: Fluctuations

Geographic Feature: ☑

resource focuses on specific type of geography

None or Unspecified

Geographic Location: ☑

resource focuses on specific location

Non-United States

Non-United States: Central/South America

Health Impact: ☑

specification of health effect or disease related to climate change exposure

Infectious Disease

Infectious Disease: Vectorborne Disease

Vectorborne Disease: Mosquito-borne Disease

Mosquito-borne Disease: Malaria

Mitigation/Adaptation: ☑

mitigation or adaptation strategy is a focus of resource

Adaptation

Model/Methodology: ☑

type of model used or methodology development is a focus of resource

Outcome Change Prediction

Resource Type: ☑

format or standard characteristic of resource

Research Article

Timescale: ☑

time period studied

Short-Term (

Vulnerability/Impact Assessment: ☑

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content